

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claims 1-20 (cancelled)

Claim 21 (Currently Amended): A phase shifter arrangement for electrically pivoting the irradiation direction of an antenna array which includes two or more radiators having two polarization planes, the phase shifter arrangement comprising two phase shifters which can be altered at the same time, having associated microstrip lines whose electrical length can in each case be altered by means of a dielectric which is arranged such that it can be displaced over the microstrip lines, wherein:

the microstrip lines of the two phase shifters are arranged parallel and next to one another;
and

~~a common,~~ said displaceable dielectric is ~~provided~~ common to both said two phase shifters for the purpose of altering the electrical length of the microstrip lines of the two phase shifters in the same direction.

Claim 22 (Currently Amended): The phase shifter arrangement of claim 21, wherein the microstrip lines and the displaceable arrangement of ~~the~~ said common displaceable dielectric are configured such that the electrical length of the two parallel microstrip lines is altered to the same extent when the dielectric is displaced.

Claim 23 (Currently Amended): The phase shifter arrangement of claim 21, wherein the microstrip lines extend essentially along a longitudinal axis, and ~~the~~ said common displaceable dielectric is displaceable in the direction of the longitudinal axis.

Claim 24 (Currently Amended): The phase shifter arrangement of claim 23, wherein the microstrip lines each has at least one center piece which is completely overlapped by ~~the~~ said common displaceable dielectric in a first position and is left completely free in a second position.

Claim 25 (Previously Presented): The phase shifter arrangement of claim 24, wherein the microstrip lines in the center pieces run transversely with respect to the longitudinal direction and have a meandering structure.

Claim 26 (Previously Presented): The phase shifter arrangement of claim 25, wherein:
two or more line sections running parallel in the longitudinal direction are provided within the meandering structure; and
the microstrip lines alter their strip width in the line sections running in the longitudinal direction.

Claim 27 (Previously Presented): The phase shifter arrangement of claim 26, wherein, when the dielectric is displaced from the second to the first position, the strip width of the overlapped line sections, starting from a minimum strip width, increases as the overlap increases up to a maximum strip width.

Claim 28 (Previously Presented): The phase shifter arrangement of claim 27, wherein the strip width increases linearly with the displacement path in the longitudinal direction.

Claim 29 (Currently Amended): The phase shifter arrangement of claim 27, wherein the minimum strip width is selected such that, when there is an overlap with ~~the~~ said common displaceable dielectric in the region of the minimum strip width, the same characteristic impedance of the microstrip lines is produced as in the region of the maximum strip width where there is no overlap with ~~the~~ said common displaceable dielectric.

Claim 30 (Previously Presented): The phase shifter arrangement of claim 26, wherein adjusting pieces having a differing strip width are arranged in the line sections running in the longitudinal direction for adjusting the characteristic impedance.

Claim 31 (Previously Presented): The phase shifter arrangement of claim 21, wherein the microstrip lines of the two phase shifters are arranged and formed on a common printed circuit board.

Claim 32 (Previously Presented): The phase shifter arrangement of claim 31, wherein the microstrip lines of the two phase shifters are designed to be mirror-symmetrical with respect to a center axis that runs parallel to the longitudinal axis of the printed circuit board.

Claim 33 (Currently Amended): The phase shifter arrangement of claim 21, wherein the microstrip lines of the two phase shifters and ~~the~~ said common displaceable dielectric above are pressed flat against one another by means of a spring metal sheet.

Claim 34 (Previously Presented): The phase shifter arrangement of claim 33, wherein:
the spring metal sheet is arranged on the underside of the microstrip lines and is electrically insulated from the microstrip lines by means of an intermediate insulating plate; and
the spring metal sheet has a plurality of individual spring tongues distributed over its surface.

Claim 35 (Currently Amended): The phase shifter arrangement of claim 21, wherein a slide is provided which is guided displaceably in the longitudinal direction, which can be actuated manually from the outside or using a motor, and which is in engagement with ~~the~~ said common displaceable dielectric.

Claim 36 (Currently Amended): The phase shifter arrangement of claim 21, wherein a plate having a relative dielectric constant of approximately 10 is used as ~~the~~ said common displaceable dielectric.

Claim 37 (Currently Amended): An antenna array comprising:
a plurality of radiators which are arranged one behind the other in a longitudinal direction, each of which includes two radiator elements provided for different polarization planes, and which are connected to two supply inputs via a supply network that includes phase shifter arrangements, each phase shifter arrangement comprising two phase shifters which can be altered at the same time, having associated microstrip lines whose electrical length can in each case be altered by means of a dielectric which is arranged such that it can be displaced over the microstrip lines, wherein:

the microstrip lines of the two phase shifters are arranged parallel and next to one another;
and

~~a common,~~ said displaceable dielectric is ~~provided~~ common to both said two phase shifters for the purpose of altering the electrical length of the microstrip lines of the two phase shifters.

Claim 38 (Previously Presented): The antenna array of claim 37, wherein:
two or more phase shifter arrangements which can be displaced at the same time are arranged one behind the other within the supply network; and
connections are provided between and downstream of the phase shifter arrangements for the purpose of connecting the radiator elements.

Claim 39 (Currently Amended): The antenna array of claim 38, wherein:
 $2n+1$ ($n=1, 2, 3, \dots$) radiator elements are arranged in the antenna array ~~$2n+1$ ($n=1, 2, 3, \dots$)~~,
 $2n$ phase shifter arrangements are arranged one behind the other in the associated supply network; the supply inputs are connected to the supply network between the n -th and the $(n+1)$ -th phase shifter arrangement; and

Application No. 10/502,413
Paper Dated: October 24, 2006
In Reply to USPTO Correspondence of July 24, 2006
Attorney Docket No. 0115-044678

all of the phase shifter arrangements can be actuated at the same time, the first n phase shifter arrangements operating in opposition to the second n phase shifter arrangements.

Claim 40 (Previously Presented): The antenna array of claim 37, wherein the supply network and the phase shifter arrangements are arranged on a common printed circuit board.